"In Order to be Successful, Technology Must Adapt to the Changes in the Marketplace"

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First, let me tell you how proud Texaco is to be a part of the team which contributed to the success of the Polk Power Station IGCC -- the cleanest coal power plant in the world. I also want to commend our friends at Tampa Electric Company for their vision, their energy and their spirit that were critical to bringing this plant on line -- and on schedule. Finally, I want to thank our DOE hosts for organizing this fine conference.

Texaco has been in the gasification business for more than 50 years, and the only "constant" we have seen in the marketplace is change. The marketplace is no longer a set of neat and distinct boxes. It is hard to discern the lines between the utility and non-utility sectors; and between the power and the refining and chemical sectors.

In the same way that marketplace distinctions have evolved, technology distinctions have evolved. In adapting gasification to the marketplace, we have learned not to view gasification as strictly a "power" technology, or as strictly a "coal" technology. It is, however, a "popular" technology because it is so many things to so many people. Thus, the emphasis of my remarks are on "technology that meets marketplace needs," not on "clean," or "coal."

A little perspective on where we've been and what we've learned will help us understand where we're going. Gasification was first used in the late 18th century to "cook" coal to produce gas for street lamps. Over the next hundred years it was primarily used to produce town gas. During the 1920's gasification was first used by the chemical industry to synthesize chemicals. During World War II and for several years thereafter, gasification was used to produce liquid fuels from coal and natural gas.

Texaco entered the gasification market during this time period, and we licensed our first commercial plant in 1946. At the start, the gasification technology appealed to the chemical industry, followed later by the refining industry, where it was used to produce hydrogen from oil and natural gas.

With the energy crises of the 1970s, America decided to become energy self-sufficient and since our most abundant energy resource was coal, it was clear that coal-based, energy self-sufficiency had to be balanced with environmental concerns. Hence, the creation of the Synfuels Corporation and later the Clean Coal Technology Program. As has been thoroughly documented at prior CCT conferences, it is important to note that these programs did indeed contribute to advancement of technology, including commercialization of technology, in the power sector. (And Texaco is

proud to have played an important role in the Clean Coal Technology Program.) It is equally important to note that some of these technologies have been, and continue to be, adapted from other, more traditional, marketplace applications.

The lessons we learned from history is that the gasification of 1996 is a far cry from the gasification of 1796. In fact, the only point of commonality is the name itself.

The marketplace, both here and abroad, has changed dramatically since the Clean Coal Technology Program was first legislated. In the United States, the Electricity Market is undergoing the most profound change since Edison first invented the light bulb. Overseas, the electricity markets are growing at a much more rapid pace than total energy demand.

We believe gasification can play a key role in the marketplace competition for power generation. National privatization and regional imbalances in projected supply/demand scenarios have created opportunities where gasification has successfully competed. Markets where the demand for power is combined with the lack of inexpensive, indigenous fuel (for example in India, Taiwan and Japan), or where the ability to use a variety of low value and/or waste feedstocks in combination with coal feedstocks, have also created opportunities where gasification has successfully competed. An interesting result from our successful efforts in the area of low value and waste feedstocks has been the importance of not necessarily characterizing gasification as a "clean coal" technology. Rather, it is a "clean, versatile" technology, with an emphasis on both "versatile" and "clean."

Against the backdrop of the recent gasification successes in the marketplace, it is important to ask "What are the challenges to future commercial success?" Let me share our thinking on a few:

1. Government -- The old attitude was that regulations must become more strict in order to foster an environmental in which gasification can succeed. The new attitude should be that government should step aside and let the market figure out how best to make this technology succeed. And that is by recognizing that a technology is only as versatile and flexible as the laws which regulate it. Gasification can do many things, and solve many problems, but only if the lawmakers are willing to advance their regulations as quickly as industry advances the technology. The EPA and other countries' environmental agencies should recognize this, as should the World Bank.

2. Perceptions -- Most of the technologies showcased at this conference are fully commercial. Gasification certainly is. So let's stop referring to these projects as "demonstration," let's stop talking about these efforts as R&D, and let's stop suggesting that these technologies need special incentives to deploy them. Similarly, let's recognize that as commercial technology, it has met the marketplace requirements for reliability and availability. Too often, as we develop technology for new marketplace applications, we are tempted to emphasize the "learning curve" issues and not give credit when those issues have been clearly addresed.

Gasification is Commercial. The commercial lending community recognizes this, as evidenced by the successful projecting financing of two IGCC projects in Italy. And the Utility market recognizes this, as evidenced by the winning bid put forth by GSK in Tokyo Electric's IPP solicitation.

3. Cost - Although gasification has enjoyed recent commercial successes, the major factors contributing to the overall costs of projects still need improvement. In particular, installed capital cost of a gasification facility continues to be perceived as a barrier to widespread commercial acceptance. The techniques for capturing and implementing reduction in cycle time, along with improvements and standardization in engineering designs are known and being used to make improvements. With the continued efforts of many of the world class technology suppliers and engineering/construction companies represented here today, we are confident this barrier will be eliminated. Overall costs can also be reduced through multiple product facilities where incremental capacity additions to accomodate more than one product result in economies of scale.

What will be the model gasification plant in the next millennium? That's tough to predict, but our current successes would illustrate the folowing trends:

1. Multiple feeds -- The feedstock versatility of gasification mentioned earlier will be more and more common. The kinds of materials we wouldn't have imagined just 20 years ago (for example petroleum coke; municipal wastes and sludges; industrial and hazardous wastes; biomass) are frequently included in project considerations. The Texaco gasification projects at the STAR Delaware City refinery in Delaware, the Texaco El Dorado refinery in Kansas, the Ube Ammonia facility in Japan, and the Quantum Chemicals facility in Texas are examples of this.

2. Multiple products -- As the walls that used to neatly define industries come down, single facilities making multiple products will become more common. With gasification's primary output being syngas, the potential for achieving greater project economies by producing fuel, hydrogen, chemicals, steam and power from syngas is significant. Texaco gasification has long been operating in the multiple hydrogen/chemicals environment. Building on the success of the SARLUX refinery based project in Italy to produce hydrogen and power, the Texaco gasification technology is now under final evaluation for several refinery/chemical facility applications, including the Shanghai Coking and Chemical Plant in China. This facility is developing a "trigeneration" project, of which two of the three legs are already operating. This single plant is designed to convert coal into methanol, electricity and town gas -- meeting three very distinct market needs -- cleanly, efficiently and with the flexibility to adapt quickly to changing market requirements.

3. Facility Integration -- Again, with the flexibility afforded by gasification's multiple feeds and multiple products potential, the ability to locate a gasification facility adjacent to, and therefore integrate the facility with, another facility (such as an existing refinery chemical plant or power plant) provides a significant opportunity for capital cost reduction and additional revenue steam generation.

4. Facility Financing -- Just as the applications for gasification technology are expected to become more complex, the methods of funding such projects are expected to be more sophisticated than the traditional model of corporate balance sheet financing. The financial community has already demonstrated its level of comfort on recent Texaco gasification power projects. Included in this success story are the financial closure of two refinery-based "project financed" transactions and one refinery-based "operating lease" transaction. Texaco is proud of its role, which included both technical assessment and commercial performance guarantees, in supporting the financial community in achieving these breakthroughs. And we clearly stand ready to continue this support for future projects.

5. Strategic Partnering -- It should come as no surprise that if the applications are expected to become more complex and the financing more sophisticated, there will need to be an evolution from the traditional project roles of owners/suppliers/etc. Teamwork among project sponsors to better manage the risk/reward profile for a gasification facility will become a must. Texaco's strategy, for example (and we know similar strategies are being initiated by other world class companies represented at this conference) emphasizes joint venture partnerships, and includes the active participation by Texaco in roles beyond the traditional perception of Texaco as technology supplier. The additional responsibilities we are pursuing when becoming an owner include responsibility for fuel supply, for operations/maintenance supervision, for establishment of maintenance programs, and for the supply of selected gasification technical support and equipment fabrication/supply. And we recognize that each of these roles must be performed to competitive standards and to bankable, contractual requirements.

The underlying theme to the facility of the future is its versatility -- using different, and multiple feedstocks to produce a host of products for different industry segments. Adapting technologies to these applications which are fully commercial will provide the most economic and efficient means of making these products from these materials, as well as being environmentally superior.

Thank you very much.